AMENDMENTS TO THE SPECIFICATION

Replace the paragraph beginning at page 5, line 14 with:

Fig. 1 is a circuit diagram showing the construction of a first preferred embodiment of a power converter according to the invention. (Throughout the figures, the same reference numerals denote the same or equivalent parts ~~and hereinafter referred to as the same meaning~~.) In Fig. 1, the primary winding 201 of a series transformer 200 is connected in series between a power supply side 1 of a line and a power supply side or load side 2 of the line. The primary windings 411 to 441 of array transformers 410 to 440 (the case of a four-stage array is shown) are connected in series to the secondary winding 202 of the series transformer 200. The AC sides of four AC-DC converter units 510 to 540 are respectively connected to the secondary windings 412 to 442 of the array transformers 410 to 440, and mutually independent DC circuits 511 to 541 are connected the DC sides of the AC-DC converter units 510 to 540.

Replace the paragraph beginning at page 7, line 16 with:

In this first preferred embodiment, as the winding arrangement of the secondary winding 202 of the series transformer 200, a delta connection, a Y connection, or a single-phase connection can be used. ~~And also~~ Also, as the winding arrangement of each of the secondary windings 412 to 442 of the array transformers 410 to 440, a delta connection, a Y connection, or a single-phase connection can be used.

Replace the paragraph beginning at page 7, line 23 with:

Next, the operation of this power converter will be explained. A characterizing feature of a power converter connected in series with a line is that the AC-DC converter units 510 to 540 themselves cannot directly control the currents flowing to

the units, and what they control ~~is~~ are only the ~~sizes~~ magnitudes and the phases of the voltages that the AC-DC converter units 510 to 540 output. The reason that the power converter can control the current of the line indirectly is that the vector sum of the output voltages of the AC-DC converter units 510 to 540 produces a voltage in the primary winding 201 of the series transformer 200 by way of the array transformers 410 to 440~~, and by that~~. With an injection voltage producing a voltage of a certain phase and a certain ~~size~~ magnitude between line 1 and line 2, ~~with~~ all the voltage sources and current sources on the line network, and ~~all the line impedances,~~ it is possible to change the current passing through the power converter. In this sense, this power converter has the function of a line power tide current control apparatus. Because of this, as the AC-DC converter units 510 to 540 of the power converter, voltage ~~sourced~~ source converters, which constitute voltage sources, are employed. As a consequence of this operating principle, it is not necessary for all the AC-DC converter units to produce the same voltage, and even if one AC-DC converter unit has stopped, the power converter can operate without any problem.

Replace the paragraph beginning at page 9, line 4 with:

It will now be supposed that the AC-DC converter unit 510 has ~~paralleled out from the line due to~~ a failure. At this time, because the current bypass device 310 has been turned on and the switches 311 and 312 have been turned off, ~~and,~~ in this first preferred embodiment, because the DC circuit 511 has been electrically cut off from the DC circuits 521 to 541 of the other AC-DC converter units, the power converter can continue to operate. The reason why it has not been possible for a power converter of the related art to operate with one or more AC-DC converter units ~~paralleled~~ out is that the AC-DC converter units have not been independent on either the AC side or the DC side.

Replace the paragraph beginning at page 9, line 16 with:

The group of AC-DC converter units 510 to 540 as a whole is required to produce a specified differential voltage in the primary winding 201 of the series transformer 200. In this first preferred embodiment, because the AC-DC converter units 510 to 540 are constructed independently, even if one or more of these AC-DC converter units ~~parallels out~~ fails, the power converter can still operate.

Replace the paragraph beginning at page 9, line 23 with:

When the required specifications of the power converter are satisfied by a number of AC-DC converter units (N), if redundancy of one or more (n) units is added and (N+n) AC-DC converter units are provided, then even if n AC-DC converter units fail, operation is possible without the maximum rating of the system being ~~lost~~ exceeded. Consequently, if AC-DC converter units are provided ~~as~~ for redundancy, operation at the 100% rating of the power converter is possible, even with ~~the~~ a number of AC-DC converter units corresponding to the redundancy ~~paralleled~~ out of service. By this means it is possible to obtain a highly reliable installation.

Replace the paragraph beginning at page 10, line 9 with:

When the maximum currents flowing through the AC-DC converter units 510 to 540 at the time of a line accident are greater than the rated currents of the AC-DC converter units 510 to 540, by increasing the number of stages of array transformers and AC-DC converter units in the construction ~~being increased~~, the maximum currents of the AC-DC converter units 510 to 540 can be reduced. This results from the nature of a power converter connected to a line in series. If the rating of the power converter is defined as the product of the voltage Vs injected into the primary winding of the series transformer 200 and the maximum current Is of the line, then the number of stages (N) can be obtained by dividing the rating of the power converter (Vs×Is) by the product of the rated voltage Vc and the rated current Ic of the array transformer (and AC-DC converter unit) of one stage (Vc×Ic). ~~Because with~~ With just the number

of stages N1 obtained from the rated current of the line ~~at~~ in normal ~~times~~ operation, the maximum current of the AC-DC converter units will exceed the rated current at the time of an accident or the like. Therefore, it is desirable to take into account a maximum current Is2, as of the time of a line accident, in setting ~~a~~ rated current Ic2 of the AC-DC converter units, and to use the AC-DC converter units and the array transformers thus derated so that they are ~~normally~~ used below their maximum ratings. Because this means designing ~~to lower~~ the voltage of the primary windings 411 to 441 of the array transformers 410 to 440 to be lower, ~~as a result~~ the number of stages N increases.

Replace the paragraph beginning at page 11, line 10 with:

Also, in this first preferred embodiment, utilizing the nature of the power converter connected in series with a line shown above, it is possible to increase the capacity of the power converter by increasing the number of array transformers and AC-DC converter units ~~in series~~, even after the power converter is installed. This characteristic feature is possible because the DC circuits of the AC-DC converter units are independent.

Replace the paragraph beginning at page 11, line 18 with:

~~And, in~~In this first preferred embodiment, in the series transformer 200, normally, when the voltage of the secondary winding has fallen, the maximum current of the secondary winding 202 increases, at the time of a line accident. When the maximum current of the secondary winding 202 exceeds the rated current of the semiconductor switch (short-circuiting device) 300 or the circuit breakers (current bypass devices) 310 to 340 or the isolators (switches) 311 to 341 and 312 to 342, ~~in the series transformer 200, reversely, in~~ their electrical conditions reverse. In the first preferred embodiment it is also possible to employ a method of optimizing the ratings of the semiconductor switch 300, the circuit breakers 310 to 340 and the isolators 311 to 341 and 312 to 342 by increasing the voltage of the secondary winding.

Replace the paragraph beginning at page 12, line 7 with:

Whereas in the first preferred embodiment a construction was adopted such that the AC-DC converter units 510 to 540 could be isolated one at a time, as shown in Fig. 2, AC-DC converter units 550 to 580 are connected to the secondary windings 452 and 462 of array transformers 450 and 460, two-by-two. In this case, although the two DC circuits 551 and 552 forming one pair are connected in common, they are independent from the DC circuits 561 and 562 forming another pair. This point is similar to the first preferred embodiment.

Replace the paragraph beginning at page 12, line 16 with:

When the number of AC-DC converter units is 2×N, compared to the first preferred embodiment, because the number of array transformer stages is N, i.e., half the number in the first preferred embodiment, the manufacturing cost of the array transformers can be expected to be cheaper. In this second preferred embodiment the AC-DC converter units have to be shut down in twos when there is a failure of an AC-DC converter unit or for a periodic check, but if redundancy ~~is~~ does not ~~affected to~~ affect the expected availability, an unproblematic system can be provided. And, in this second preferred embodiment, because two AC-DC converter units are controlled at the same time, certain circuits of control units (not shown), such as those for DC voltage control can be ~~made~~ common and ~~cut down~~ reduced to one circuit per two AC-DC converter units, whereby cost reductions can be achieved.

Replace the paragraph beginning at page 13, line 7 with:

Fig. 3 is a circuit diagram showing the construction of an ordinary single-phase AC-DC converter (single-phase inverter). In the figure, self-quenching devices 911, 912 and flywheel diodes 921, 922 are connected to an AC-side terminal 901, and self-quenching devices 913, 914 and flywheel diodes 923, 924 are connected to an AC-side terminal 902. A condenser 930 is connected to DC-side terminals. The second

preferred embodiment can also be applied in a case where an AC-DC converter unit constitutes a single-phase bridge of the kind shown in Fig. 3. In the case of a line, such as a single-phase AC wire for an electric train, because a 3-phase bridge AC-DC converter unit cannot be used, it is necessary to employ a single-phase bridge AC-DC converter unit of the kind shown in Fig. 3.

Replace the paragraph beginning at page 14, line 19 with:

In the first preferred embodiment, normally, when the voltage of the secondary winding of the series transformer 200 is reduced, the current of the secondary winding 202 increases. When ~~consequently~~, at the time of a line accident, the maximum current flowing through the secondary winding 202 ~~will become~~ becomes too large, a semiconductor switch 300 with a large rated current is ~~manufactured~~ actuated. ~~When~~ If it is easier to manufacture a high-voltage semiconductor switch 300 with a low rated current than a low-voltage semiconductor switch 300 with a high rated current, the series transformer 200 can be dispensed with and a construction like that of the third preferred embodiment employed.

Replace the paragraph beginning at page 15, line 7 with:

Whereas in the second preferred embodiment the series transformer 200 was disposed between a power supply side 1 of a line and a power supply side or load side 2 of the line and array transformers ~~450 to 460~~ 410 and 420 and AC-DC converter units 550 to 580 were provided, a construction in which ~~the~~ array transformers 450 ~~to~~ and 460 are connected in series between a power supply side 1 of a line and a power supply side or load side 2 of the line directly is also possible, as in the fourth embodiment shown in Fig. 5. A current bypass switch (circuit breaker, isolator or semiconductor switch) 300 is connected in parallel with all the primary windings 451 to 461 of the array transformers 450 ~~to~~ and 460, and, at the time of a line accident, bypasses ~~all of~~ the primary windings 451 ~~to~~ and 461 of the array transformers 450 ~~to~~ and 460 together.

Replace the paragraph beginning at page 16, line 4 with:

In the second preferred embodiment, normally, when the voltage of the secondary winding of the series transformer 200 is reduced, the current of the secondary winding 202 increases. When ~~consequently~~, at the time of a line accident, the maximum current flowing through the secondary winding 202 ~~will become~~ becomes too large, a semiconductor switch 300 with a large rated current is ~~manufactured~~ actuated. ~~When~~ If it is easier to manufacture a high-voltage semiconductor switch 300 with a low rated current than to manufacture a low-voltage semiconductor switch 300 with a high rated current, the series transformer 200 can be dispensed with and a construction like that of the fourth preferred embodiment employed.

Replace the paragraph beginning at page 17, line 22 with:

The alteration of construction applied to the first preferred embodiment to supply the fifth preferred embodiment can also be applied to the second, third, and fourth preferred embodiments.